SURVEYING AND MAPPING

526

Editor-in-Chief
Howard S. Rappleye,

A QUARTERLY JOURNAL
DEVOTED TO THE ADVANCEMENT OF THE SCIENCES
OF SURVEYING AND MAPPING

R-1

Supplement to
Volume XVII, No. 4
October-December 1957

PUBLISHED BY THE
AMERICAN CONGRESS ON SURVEYING AND MAPPING
BOX 470, BENJAMIN FRANKLIN STATION, WASHINGTON 4, D. C.

The opinions and recommendations set forth in the attached report of the Task Committee on Status of Surveying and Mapping of the American Society of Civil Engineers have not yet been officially adopted by A.S.C.E. Members of the American Congress on Surveying and Mapping are being provided with copies at this stage to provide opportunity for study. All A.C.S.M. members directly interested are urged to carefully consider this report. Comments may be submitted to Secretary Dix for consolidation and transmittal to the American Society of Civil Engineers.

R. H. Lyddan
President

December 4, 1957

AMERICAN SOCIETY OF CIVIL ENGINEERS

Surveying and Mapping Division

The Second Interim Report of the Task Committee on Status of Surveying and Mapping

October 18, 1957

Foreword

The Surveying and Mapping Division of ASCE was requested by the Board of Direction in October 1953 to classify the varied operations of surveying and mapping into professional, sub-professional, and non-professional. After considerable deliberation, the Executive Committee of the Division in October 1954 appointed the present Task Committee to work on this problem, as also to investigate the correlative question, whether some or all of the professional activities in surveying and mapping should be recognized as civil engineering, or as a field of science apart from civil engineering. It is noted that the three members of the Task Committee were selected to represent the interests of education, private practice, and government.

Initial report (October 1955)

On October 24, 1955, the initial report of our Task Committee was presented to the Executive Committee of this Division. The report was subsequently published as Proceedings Paper No. 921 (March 1956 Journal of the Surveying and Mapping Division, Vol. 82, No. SU1), under the title, "Professional Aspects of Surveying and Mapping."

This report contained a comprehensive definition of the overall field of surveying and mapping, comprising six general categories, as follows:

Category I, Land surveying (cadastral)

Category II, Engineering surveys (for design and construction)

Category III, Geodetic surveys

Category IV, Cartographic surveys (topographic, hydrographic, etc.)

Category V, Aerial survey services (aerial photography, etc.)

Category VI, Cartography (map finishing, and map compiling from other than original surveys)

The initial report also listed certain typical "professional," "technician," and "pre-professional" duties in each of the six categories. No attempt was then made, however, to ascertain which duties or which categories were engineering in nature, this being beyond the assigned scope of that first study.

First Interim Report (October 1956)

Our Committee's views as to which of the six categories should be classified as civil engineering were presented in October 1956 in our "Interim Report of Task Committee on Status of Surveying and Mapping." This report was published in Civil Engineering (March 1957, Vol. 26, pp 189-191), and was reprinted in Surveying and Mapping, the quarterly magazine of the American Congress on Surveying and Mapping (June, 1957, pp 203-205).

Our views at that time were, briefly:

That Category I (land surveying, cadastral) should be regarded as a profession separate and distinct from engineering, in view of certain official pronouncements of NCSBEE in 1948 and 1956, and of NSPE in 1952.

That Categories II (engineering surveys), III (geodetic surveys), and IV (cartographic surveys) should continue to be regarded by ASCE as civil engineering.

That Categories V (aerial survey services) and VI (cartography) should be regarded as non-engineering.

Opinions solicited nationwide

During the past 12 months extensive efforts have been made to solicit opinions on the views expressed in these two reports from all ASCE local sections, other technical societies, state and local associations of engineers and land surveyors, and educators. Nearly two hundred reprints of the First Interim Report, together with appropriate transmittal letters, were sent out for this purpose. Also, we have had papers published in six magazines or journals, and individual members have addressed at least fifteen gatherings of surveyors and engineers from coast to coast. Everyone has been encouraged to assist in the work of the committee.

About 70 written responses were received, but many of these represented group opinions and reports from committees designated by engineer-surveyor groups to study and report. Additionally, the three members of the Task Committee have been in personal communication, much of it oral, with hundreds of other persons. It is believed that we now have a significant body of opinion and affirmation to warrant certification of the findings hereinafter stated.

Findings Resulting from Nationwide Responses

With respect to the views expressed in our initial report of October 1955, we find, based on responses to date, almost unanimous acceptance throughout the profession for the six-category definition of the overall field of surveying-mapping.

Similarly, we find almost unanimous agreement with our evaluation of typical "professional level" and "technician level" duties within each category.

We therefore feel that this phase of our study is complete, except for a possible slight modification of the detailed breakdown within one or two of the categories. Any such changes would appear in our final report, expected to be ready in October 1958.

With respect to the views expressed in our first interim report of October 1956, we find as follows:

Re Category I, land surveying (cadastral)

In October 1956 the view was held that land surveying should be regarded as an activity separate and distinct from engineering. Today, after having received much objection to this stand, the Task Committee must state that there is no clear support of such conclusion.

We find that more than half of the profession (including a national committee of surveying teachers)* believe that Category I (land surveying-cadastral) should continue to be regarded as a branch of civil engineering despite the 1948, 1952, and 1956 resolutions of NCSBEE and NSPE to the contrary. (Those who are on this side of the question obviously believe that NCSBEE and NSPE cannot and do not represent the views of the civil engineering profession, and that this is a matter which should be settled by civil engineers and surveyors themselves, by and within their own societies.)

We therefore must retract the recommendation of 1956 that land surveying be regarded as an activity separate and distinct from engineering.

Furthermore, it is abundantly clear from virtually all the returns that our strict delimiting of the activity of land surveying to merely boundary-line determination neither properly reflects existing conditions nor strikes a responsive chord in the sentiments of those who have communicated with us on the matter. Nearly all would insist that the property surveyor must do (and is qualified to do) much topographic work and street layout work, especially in conjunction with subdivision development. Additionally, some writers plead a case for the surveyor's performance of virtually all work in Categories I, II, III, and IV, stating that this is presently the case with some persons, but primarily recognizing that one cannot draw a line of demarcation in this matter with any degree of ease or assurance. This is an argument essentially to minimize the artificial barricade that seemingly has been set up in recent years between surveyor and engineer.

Others insist upon the right of land surveyors to continue to do subdivision planning and design (including drainage structures, storm and sanitary sewers, etc.) as part of their normal work in subdivision development, on the plea of prescription as well as ability, and also because these simple designs are usually reviewed by competent county and/or state authorities before acceptance and approval.

---

*See 1957 resolution by National Committee of Surveying Teachers, in attachment.

Somewhat less than half of the responses supported the view that land or boundary surveying should be divorced from engineering and that it should be recognized as a separate profession. However, we do not believe that this simple statement of the case is an adequate presentation of this view, nor do we feel that the proponents of separation, when given opportunity to discuss and weigh the proposal, will necessarily continue to hold the view. We feel that most of those who have approved separation probably have merely agreed with the premise in our 1956 Interim Report, while really concentrating their attention on the other areas of the report of more direct concern to them; or that they have supported the "premise" in an attempt to avoid bringing about or renewing an unsatisfactory situation that can prevail under the (mistaken) notion that all civil engineers are competent to do land surveying work. We feel that these proponents of a "separate profession" for land surveying have been forced to choose thus because of lack of a clearly established policy that regards land surveyors as civil engineers, and that also safeguards the specialized operation of land surveying from incompetent practitioners.

Further investigation needed for land surveying (cadastral)

We therefore believe that there is need for clarification in this relatively confused area. Also we feel it is likely that a proposal can be made which will be acceptable to proponents of both sides of the question. The principal elements of such a proposal have been worked out by our Committee, and we plan to submit it to a substantial cross-section of the members of the profession for their review and comment. We hope that it may be a solution to the problem and may secure the support of all, whether they regard themselves primarily as engineers or as surveyors.

New proposal for land surveying (cadastral)

A general description of the new proposal, and the broad basis on which it rests, was included in a talk by the Task Committee chairman before the Texas Surveyors Association on October 8, 1957. Those portions of that talk dealing with this matter have been extracted and formed into a rough draft of suggestions bearing on this new proposal. The main elements of the proposal are: recognition by both land surveyors and engineers that there is a large area of overlap common to their normal activities; that this overlap precludes any clear separation of the two fields of activity; that henceforth the members of both groups should consider themselves to be members of the same profession, civil engineering; that they should cooperate in all respects to present a united front to other professions and societies, including state registration boards; and that none should engage in the practice of cadastral surveying in any area until clearly qualified by knowledge of local conditions, local records, and local laws and court decisions, regardless of whether or not separate examinations for registration for land surveying are required. Probably this plan would lead ultimately to a requirement that cadastral surveyors would first be registered as engineers, with official certification of competence in cadastral surveys being granted separately at a later time.

Probably another year would be required to develop this proposal in detail, to disseminate it widely, and to allow time for study and discussion by all. The Task Committee requests that this extension of time be granted, and that the new proposal, and the plans for referring it to the profession for opinions on a sampling basis, be approved.

A final report on this question would be prepared as soon as there is assurance of either 1) fairly unanimous acceptance of the proposal as truly representative of, and compatible with, conditions and practices throughout the United States, or 2) rejection by a majority.

Re Categories II to VI inclusive

Our 1956 Interim Report contained the findings that Categories II, III, and IV are engineering, and Categories V and VI are non-engineering.

Those findings have been substantiated by a solid weight of written opinion of virtually all who have written to the Task Committee, as also by much spoken opinion. Additionally, no substantive contrary opinions have been received. We therefore affirm our 1956 findings re these categories.

It is also significant that within recent weeks the U. S. Civil Service Commission has issued a Draft of Revised (Tentative) Standards for the Cartography Series (GS-1370-0). This new governmental definition of Cartography includes mainly the non-engineering operations of our Category VI, and in general excludes all of the engineering operations of our Categories I, II, III and IV. This tentative action is entirely conformable to the findings of our Interim Report, and hence has been informally endorsed by our Committee.

Implications for the Society

The Task Committee, while recognizing that its role is primarily that of a fact-finding committee for the Surveying and Mapping Division, nevertheless wishes to bring to attention certain implications that seem to be within its purview. Assuming ultimate approval by the Surveying and Mapping Division and the Society of the Task Committee's views, it follows that the Society, working mainly through its Surveying and Mapping Division, should be prepared to accept and implement certain duties and responsibilities therewith, such as:

a) To publicize widely its official position that the surveying activities (including surveys by photogrammetric methods), of Categories II, III, and IV, (and perhaps also Category I) are civil engineering;

b) To advise and/or rule on questions of professional ethics that may arise in the surveying-mapping field (particularly with respect to contracts for surveying-mapping services);

c) Ultimately, after passage of such reasonable period of time as may be necessary for effecting adjustments from present practices, to take such steps as are required to bring all professional-level surveying-mapping activities into line with the accepted code of ethics.

d) To welcome applications for membership from engineers who specialize in the surveying-mapping field, and to accept appropriate professional-level experience in surveying-mapping work as fully qualifying for either Associate Member or Member of ASCE.

Respectfully submitted,

Task Committee on Status of Surveying and Mapping

Brother B. Austin Barry, Chairman
George D. Whitmore
Alfred O. Quinn

APPENDIX to Second Interim Report of Task Committee on Status of Surveying and Mapping

October 14, 1957

Suggestions* (Draft) on which to base

A PROPOSAL REGARDING LAND SURVEYING (Oct. 1957)

Introduction

Although it be readily admitted that (land) surveying was historically civil engineering, at the time of adoption of the now-famous Model Law in the mid-thirties, a clause was inserted to assure effectively that anyone not specifically licensed therefor be prohibited from engaging in surveys for property-line determination, i.e., land surveying (cadastral). In the years since then, State after State drew up its own Registration Act based upon the Model Law until now practically every real property holder in the Union is protected from incompetent land surveyors.

During these two decades, the surveyor-engineer relationship has generally been cordial, though too frequently strained. Sometimes the strain has shown, and then both suffered a drop in prestige. By and large they managed to do a fine job, working each in his own sphere, but always there was a common ground of surveying operation: topographic surveying, construction layout, hydrographic surveys, geodetic work, mapping, and control surveys. Today it seems time to examine the common area or "overlap" without fear and with predjudice to no one.

The Basic Proposal

We suggest that the overlap is so certain and deeply entrenched that the (land) surveyor is in fact an engineer, and that he cannot be regarded as otherwise. If we do speak of "the surveying profession", we need not mean it bears no real relationship to what is loosely called "the engineering profession." If we can think of the sanitary engineer, the structural engineer, the civil engineer, the mechanical engineer, or the electrical engineer, as an engineer, and call any one of these a profession, then why cannot we likewise regard the surveying profession as one branch of the engineering profession?

We suggest that it is certainly correct. The (land) surveyor prefers to hire engineering graduates to do his work; his property determination is the start and basis for every engineering project; his methods, tools, and operations are practically indistinguishable from those of engineering; he needs an engineering education to do his work with the greatest efficiency and economy; he is an engineer in the eyes of the public at large; to most engineers of whatever type, he is an engineer.

The scheme is simple. Let the land or property surveyor identify himself with, not disavow himself from, the engineer: let him insist upon unity of profession and purpose. Let him not subconsciously look to a law to protect him from the engineer. If such a licensing act exist it might remain; if not, it need not be enacted, for the self-policing of an ethical relationship should be the guiding principle to protect the public welfare.

Separate vs. Combined Registration

The doctrine outlined here may prove a bit of a shock to some at first, but it is already effectively in operation in some areas.

There is nothing inherently unworkable about the doctrine. First, simply by interpretation; gradually then through an extension of the examination coverage to include topographic and hydrographic surveys, site investigation and construction surveys, etc.; finally by ultimate amalgamation of the two examining boards could the unity of the professions be brought about while all the safeguards to the public are maintained. It would take time, but so do all worth-while achievements.

Why This Proposal Now

There are valid reasons now for pushing such a proposal at this time, reasons at once simple yet far-reaching indeed. First, the existence of a profession and its continuance depend upon the imparting of a body of professional knowledge (at college level generally), yet in the past twenty years the engineering colleges, perhaps regarding themselves as emancipated from their obligations in this respect, have almost completely dropped the teaching of any kind of property surveying. The trend to

---

* Mainly extracts from a talk by Brother E. Austin Barry, Chairman of Task Committee on Status of Surveying and Mapping, before the Texas Surveyors Association on October 8, 1957 and approved in principle by the other members of the Committee. Proposed to be rephrased in a form suitable for use by the Committee during 1958 in sampling opinions of civil engineers and land surveyors throughout the United States.

reduction still continues. Surveying practitioners have suffered from this drying-up of the source of ideas and manpower, have tried stop-gap measures such as extension courses, and have perforce relied almost completely on the apprentice system. The pinch will be increasingly felt unless an action now can stir the engineering colleges to stem the tide and replace the disappearing land surveying discipline.

Important too is the need now more than ever for unity in the surveying and engineering field. And how better achieve this unity than to let there come into being what practically exists already, a surveyor engineer who not alone does property work but does all the surveying there is to be done in any engineering endeavor. The like system has worked in Europe, and in fact throughout the world, for many years -- and surveyors are held in the highest regard by fellow engineers and laymen alike. There would be no need for controversy about who be allowed to do this or that task -- any more than there is within the medical profession any fear of encroachment between the surgeon and the general practitioner. They are a unified profession, and so too should we be.

The Alternative to Finding that Surveying is Engineering

Let us look at the alternative to remaining engineers. A serious, even alarming, consideration has been mentioned, the dissolution of surveying in the educational set-up; if continued it would leave the status of land surveying as a learned profession open to question. On this point it is well to review Mr. Lloyd Blauch's eleven characteristics of a profession (quoted in our first-phase report, Paper #921), especially these:

6. A body of specialized literature;

7. Capable, above average, well educated personnel;

8. Schools on the college and university level; and

11. A considerable amount of liberal or general education.

Caution should be used in making the determination that land surveying is a self-contained profession unto itself therefore, especially in view of these objective educational criteria.

The View of the Teaching Profession

The Task Committee believes likewise it has a substantial mandate from the teaching profession, as seen in resolution below, (adopted in August 1957 at the Fourth National Surveying Teachers' Conference) relating to this problem:

> "It is the considered and unanimous opinion of this committee that surveying and mapping constitute a professional operation. Included within this sphere is the entire body of original surveys, specifically topography (of which photogrammetry is a tool), geodesy, engineering and construction surveys, and the delineation of boundaries of property..... It is agreed that these operations are essentially professional engineering. (Emphasis added.)
>
> "The position of the majority of the committee is outlined herewith:
>
> 1. The problem of professional status must be solved by some modification of present registration laws in the several states which deal with the practice of professional engineering and land surveying, and by some additions or alterations in present engineering curricula.
>
> 2. The present practice of educating land surveyors through an apprentice system and licensing them to operate within the narrow field is outdated, was applicable only to the times when the principal work of the land surveyor was the retracement of section lines, and should eventually be abolished.
>
> 3. Training in the professional phases and legal elements of land surveying should be made available on an optional or elective basis within the framework of engineering curricula.....
>
> 4. Additionally, similar training at junior colleges, in technical institutes, and through university extension services should be made available to students and surveyors-in-training who would not otherwise have access to this training. This should be continued until such time as it

becomes practicable and expedient to abolish the separate registration of land surveyors as discussed above.

"The committee believes that the above steps, though visionary, should be established as an ultimate goal leading to the complete acceptance of surveying as a branch of civil engineering and a greater competence of the practitioner in this field".

- - - - - - - - - - - - - - - - - -

It is to be noted that in this report, adopted by the Conference as a policy, the surveying teachers accept all surveying (including boundary determination) as a branch of engineering, thus seeking to assure its retention and revitalization in the engineering curriculum.

Conclusion

May we suggest finally, in keeping with the above, that one think positively in terms of the "surveyor" as the engineer who in the ideal arrangement is competent to perform any work designated in Categories I, II, III, and IV of the Classification Chart. Some surveyors would do all types of work listed; others would specialize. Many in private practice would necessarily engage in planning and design for subdivision development, including street grades, drainage structures, sanitary sewers, etc. But the unity within the surveying group and between that group and the entire engineering profession is of paramount importance to all, and the Task Committee offers this proposal for the earnest consideration of all concerned with the problem.